

1 10. The method of claim 6, wherein the step (a) of providing a tissue sample
2 comprises obtaining the tissue sample from a human subject; and the step (b) of analyzing the
3 tissue sample comprises isolating RNA from the tissue sample, generating cDNAs from the
4 isolated RNA, amplifying the cDNAs by PCR to generate a PCR product, and
5 electrophoretically separating the PCR product to yield an electrophoretic pattern.

1 11. The method of claim 10, wherein the step of amplifying the cDNAs by PCR is
2 performed using an oligonucleotide primer comprising a nucleotide sequence selected from the
3 group consisting of SEQ ID NOs:7, 8, 15, and 16.

1 12. The method of claim 10, wherein the step of amplifying the cDNAs by PCR is
2 performed using a first oligonucleotide primer and a second oligonucleotide primer, the first
3 oligonucleotide primer comprising a nucleotide sequence selected from the group consisting of
4 SEQ ID NOs:7 and 15, and the second oligonucleotide primer comprising a nucleotide sequence
5 selected from the group consisting of SEQ ID NOs:8 and 16.

1 13. The method of claim 12, wherein the presence of a 472 base pair nucleic acid in
2 the electrophoretic pattern indicates that the tissue sample contains a cancer.

1 14. The method of claim 6, wherein the step (b) of analyzing the tissue sample for the
2 SIM2 nucleic acid comprises contacting the tissue sample with an oligonucleotide probe that
3 hybridizes under stringent hybridization conditions to a polynucleotide having a nucleic acid
4 sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, the complement of
5 SEQ ID NO:1, and the complement of SEQ ID NO:2.

1 15. The method of claim 14, wherein the oligonucleotide probe comprises the nucleic
2 acid of SEQ ID NO:9.

1 16. The method of claim 14, wherein the oligonucleotide probe further comprises a
2 detectable label.

1 17. The method of claim 1, wherein the SIM2 marker is a SIM2 protein.

1 18. The method of claim 17, wherein the SIM2 protein is a native SIM2 protein.

1 19. The method of claim 18, wherein the native SIM2 protein has an amino acid
2 sequence selected from the group consisting of SEQ ID NO:3 and SEQ ID NO:4.

20. The method of claim 17, wherein the step (a) of providing a tissue sample
comprises obtaining the tissue sample from a human subject; and the step (b) of analyzing the
tissue sample comprises contacting at least a portion of the tissue sample with a probe that
specifically binds to the SIM2 protein.

21. The method of claim 20, wherein the probe comprises a detectable label.

1 22. The method of claim 20, wherein the probe comprises an antibody.

1 23. The method of claim 23, wherein the antibody specifically binds to the peptide of
2 SEQ ID NO:14.

1 24. The method of claim 1, wherein the tissue sample comprises a cell isolated from
2 a source selected from the group consisting of feces, urine, and peripheral blood.

1 25. A method of modulating SIM2 gene expression comprising the steps of:
2 (a) providing a cell that expresses a SIM2 gene; and
3 (b) introducing into the cell an agent that modulates the expression the SIM2
4 gene in the cell.

1 26. The method of claim 25, wherein the agent is an oligonucleotide.

1 27. The method of claim 26, wherein the agent is an antisense oligonucleotide.

1 28. The method of claim 27, wherein the antisense oligonucleotide hybridizes under
2 stringent hybridization conditions to a polynucleotide that encodes a SIM2 protein.

1 29. The method of claim 28, wherein the antisense oligonucleotide is at least 18
2 nucleotides in length and comprises a sequence that is a complement of a nucleic acid that
3 encodes the SIM2 protein.

1 30. The method of claim 27, wherein the antisense oligonucleotide comprises a
2 nucleic acid sequence selected from the group consisting of SEQ ID NOs: 11 and 12.

1 31. A method of identifying a test compound that modulates expression of a SIM2
2 gene in a cell, the method comprising the steps of:

3 (a) providing a cell expressing a SIM2 gene;
4 (b) contacting the cell with the test compound; and
5 (c) detecting a modulation in the expression of the SIM2 gene, wherein
6 detecting the modulation indicates that the test compound modulates expression of the SIM2
7 gene.

1 32. The method of claim 31, wherein the cell is derived from a tissue sample selected
2 from the group consisting of a colon tissue sample, a prostate tissue sample, and a pancreas
3 tissue sample.

1 33. The method of claim 31, wherein the step of detecting the modulation in the
2 expression of the SIM2 gene comprises analyzing the cell for a change in the intracellular
3 concentration of a SIM2 marker.

1 34. The method of claim 33, wherein the SIM2 marker is a SIM2 nucleic acid.

35. The method of claim 34, wherein the SIM2 nucleic acid is a SIM2 mRNA.

36. The method of claim 33, wherein the SIM2 nucleic acid is a native SIM2 nucleic
acid.

2 37. The method of claim 36, wherein the native SIM2 nucleic acid has a nucleotide
sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

1 38. The method of claim 33, wherein the SIM2 marker is a SIM2 protein.

1 39. The method of claim 38, wherein the SIM2 protein is a native SIM2 protein.

1 40. The method of claim 39, wherein the native SIM2 protein has an amino acid
2 sequence selected from the group consisting of SEQ ID NO:3 and SEQ ID NO:4.

1 41. A method for reducing the growth rate of a cancer comprising a cell expressing a
2 SIM2 protein, the method comprising the step of:
3 contacting the cell with an agent that inhibits the expression of the SIM2 protein
4 in the cell.

1 42. The method of claim 41, wherein the agent is an oligonucleotide.

1 43. The method of claim 42, wherein the agent is an antisense oligonucleotide.

1 44. The method of claim 43, wherein the antisense oligonucleotide hybridizes under
2 stringent hybridization conditions to a polynucleotide that encodes the SIM2 protein.

1 45. The method of claim 44, wherein the antisense oligonucleotide is at least 18
2 nucleotides in length and comprises a sequence that is a complement of a nucleic acid that
3 encodes the SIM2 protein.

1 46. The method of claim 42, wherein the antisense oligonucleotide comprises a
2 nucleic acid sequence selected from the group consisting of SEQ ID NOs: 11 and 12.

1 47. The method of claim 46, wherein the nucleic acid sequence is SEQ ID NO:12.

1 48. The method of claim 41, wherein the cancer is selected from the group consisting
2 of a colon cancer, a prostate cancer, and a pancreas cancer.

1 49. The method of claim 41, wherein the cancer is a colon cancer.

1 50. The method of claim 41 wherein the cancer is in an animal.

1 51. The method of claim 50, wherein the animal is a mammal.

1 52. A kit for modulating expression of a SIM2 gene in a cell, the kit comprising:
2 an agent that modulates the expression of the SIM2 gene in the cell and instructions for using the
3 agent to modulate the expression of the SIM2 gene in the cell.

1 53. The kit of claim 52, wherein the agent is an oligonucleotide.

1 54. The kit of claim 53, wherein the agent is an antisense oligonucleotide.

1 55. The kit of claim 54, wherein the antisense oligonucleotide hybridizes under
2 stringent hybridization conditions to a polynucleotide that encodes a SIM2 protein.

1 56. The kit of claim 55, wherein the antisense oligonucleotide is at least 18
2 nucleotides in length and comprises a sequence that is a complement of a nucleic acid that
3 encodes the SIM2 protein.

1 57. The kit of claim 54, wherein the antisense oligonucleotide comprises a nucleic
2 acid sequence selected from the group consisting of SEQ ID NOs: 11 and 12.

1 58. The kit of claim 57, wherein the nucleic acid sequence is SEQ ID NO:12.